

REMARKS

Status of the Claims

Claims 1, 2, 4 and 18-20 are pending in this application, the independent claims being claims 1 and 18. By this Amendment, claims 1, 2, 4 are amended and remain pending; claims 18-20 previously were withdrawn from consideration pursuant to a restriction/election of species requirement, but are amended and re-presented for consideration.

Summary of the Official Action

In the Official Action, claims 1, 2 and 4 were rejected under 35 U.S.C. §102(b), as anticipated by U.S. Patent No. 6,078,060 (Shibuya).

Claims 18-20, newly presented in the prior Amendment filed May 17, 2005, were indicated as withdrawn from consideration in the present application.

Reconsideration and withdrawal of the rejection and restriction/election of species requirement respectfully are requested in view of above amendments and the following remarks.

Claim Amendments

The rejection of the claims over the cited art respectfully is traversed. Nevertheless, without conceding the propriety of the rejection, claims 1, 2, 4 and 18-20 have been amended herein more clearly to recite various novel features of the claimed invention. Support for the amendments may be found in the original application. No new matter has been added.

In this regard, claims 18-20 recite features that parallel the features of independent claim 1, in combination with additional features, and Applicant submits that these claims are directed to the elected species/p-channel driving transistor of Figs. 4 and 5. Accordingly, if claim 1 is found to recite allowable subject matter, then Applicant submits that claim 18 also recites allowable subject matter, and respectfully requests that the restriction/election of species requirement be withdrawn, and that claims 18-20 be examined in the present application.

Claimed Invention

The present invention relates to a novel p-channel driving thin-film transistor. In one aspect, as recited in independent claim 1, the claimed invention relates to a p-channel driving thin-film transistor controlling a light-emitting state of a light-emitting element. The p-channel driving thin-film transistor comprises an active region, a source region, and a drain region, the source region and the drain region being provided at each side of the active region, respectively. An area of a cross section of the source region is approximately equal to an area of a cross section of the drain region, where the cross sections are taken along a plane generally perpendicular to a mounting surface of the driving thin-film transistor. The source region and the drain region include regions adjacent to the active region, where the adjacent regions include lightly doped impurity regions with an impurity concentration less than an impurity concentration of the drain region. The lightly doped impurity regions are provided in an asymmetrical form in which the lightly doped impurity region in the source region is smaller than the lightly doped impurity region in the drain region.

Those skilled in the art will recognize that the claimed p-channel transistor structure provides a significant advantage over prior disclosed n-channel transistor structures when used as a driving transistor in the claimed invention, as disclosed in the present application. Specifically, when a p-channel transistor is used as the driving transistor, the source-side of the p-channel transistor is connected to the power line; accordingly, constant current can be obtained without relation to load variations in the good case of a saturation characteristic of a TFT. However, if an n-channel transistor is used as the driving transistor, then the source side of the n-channel transistor is connected to an organic EL element; accordingly, in such a structure the current may be variable with relation to variation in the load.

Rejection over the Prior Art Traversed

Applicant submits that the prior art fails to anticipate the claimed invention. Moreover, Applicant submits that there are differences between the subject matter sought to be patented and the prior art, such that the subject matter taken as a whole would not have been obvious to one of ordinary skill in the art at the time the invention was made.

The Shibuya '060 patent relates to active matrix display devices and methods of manufacturing the active matrix display devices, and discloses an active matrix display device including a driving transistor. However, Applicant submits that the Shibuya '060 patent fails to disclose or suggest at least the above-described features of the claimed invention. Rather, the Shibuya '060 patent illustrates in Figs. 2-9, and particularly in Figs. 3B and 8B, an active matrix display device including an n-type channel thin-film transistor/driver portion including a lightly-doped portion 130 close to a drain region 13 and a lightly-doped portion 128 close to a source region 111 (col. 7, line 44 - col. 8, line 6), where the lightly-doped portion 130 is made larger than the lightly-doped region 128 (col. 11, lines 14-20, and col. 11, line 61 - col. 12, line 9). The Shibuya '060 patent teaches that locating the lightly-doped region 130 close to the drain region 113 prevents deterioration (col. 11, lines 2-7); thus, the Shibuya '060 patent teaches that the lightly-doped region 128 located close to the source region 111 is not required (col. 11, lines 7-8). However, the Shibuya '060 patent is not understood to disclose or suggest a p-channel driving transistor, as disclosed in the present application and recited in the claims. As discussed above, Applicant submits that the claimed invention, including a p-channel driving transistor, provides a significant improvement over the n-channel driving device of the Shibuya '060 patent.

For the above reasons, Applicant submits that claim 1 is allowable over the cited art.

Claims 2, 4 depend from claim 1 and are believed allowable for the same reasons. Moreover, each of these dependent claims recites additional features in combination with the features of base claim 1, and is believed allowable in its own right. Similarly, claims 18-20

recite features that parallel the n-channel driving transistor features of claim 1, and are believed allowable for the same reasons, and for reciting additional features in combination therewith.

Individual consideration of claims 2, 4 and 18-20 respectfully is requested.

Request for Personal Interview

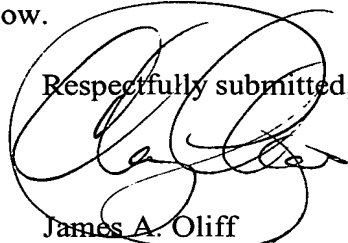
If the Examiner is not persuaded by the above remarks, Applicant's attorney respectfully requests that the Examiner contact Applicant's attorney to schedule a personal interview to further discuss various novel features of the claimed invention in light of the cited art, prior to taking further action in this application.

Conclusion

Applicant believes that the present Request is responsive to each of the points raised by the Examiner in the Official Action, and submits that the Application is in condition for allowance. Favorable consideration of the claims and passage to issue of the application at the Examiner's earliest convenience earnestly are solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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JAO:CPW

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